

Patent claims

- 1 1. A circuit arrangement for operating a sensor, in particular, a circuit arrangement
2 for a linear exhaust gas sensor for an internal combustion engine, comprising:
3 - a control circuit that is designed to electrically supply the sensor via a
4 plurality of connecting lines and/or at least to detect one electrical output signal
5 of the sensor in which case one of the connecting lines is routed via one
6 actuatable switching element that is suited to interrupt this line, and in which
7 case the circuit arrangement is designed to detect the potential on at least one of
8 the connecting lines and, should an abnormal potential be detected on this
9 connecting line, to actuate the switching element for interrupting the connecting
10 line,
11 - at least one actuatable further switching element that is suitable for
12 connecting a pair of the connecting lines, wherein the circuit arrangement is
13 designed in such a way that it can actuate the connection of these connecting
14 lines should an abnormal potential of this further switching element be detected
15 to break down a potential difference between the connections of the sensor.
- 1 2. The circuit arrangement according to Claim 1, wherein a number of the
2 connecting lines are routed via a switching element that can be actuated and that
3 is suitable for interrupting the relevant connecting line and, should an abnormal
4 potential be detected, these switching elements are at the same time actuated to
5 interrupt the relevant connecting lines.
- 1 3. The circuit arrangement according to Claim 1, wherein an actuatable further
2 switching element is provided in each case between a number of pairs of the
3 connecting lines that is suitable for connecting the corresponding connecting
4 lines in pairs, and should an abnormal potential be detected, these further
5 switching elements are at the same time actuated to connect the relevant
6 connecting lines.

- 1 4. The circuit arrangement according to Claim 1, wherein at least one of the
2 switching elements and/or further switching elements are designed as a channel
3 of a transistor.
- 1 5. The circuit arrangement according to Claim 1, wherein at least one of the further
2 switching elements can be operated wattless to connect the two connecting lines.
- 1 6. The circuit arrangement according to Claim 1, wherein at least one of the further
2 switching elements is actuated to connect the two connecting lines by means of
3 an actuating circuit which provides an actuating potential for actuating purposes
4 and is applied to a control input of the switching element, and in which case this
5 actuating circuit is connected to a number of connecting lines to be supplied
6 with the abnormal potential when an abnormal potential occurs on one of these
7 connecting lines.
- 1 7. The circuit arrangement according to Claim 1, wherein the control circuit as well
2 as the switching elements and further switching elements are united in an
3 integrated circuit.

- 1 8. A method for operating a sensor, in particular, a linear exhaust gas sensor for an
2 internal combustion engine, comprising the steps of:
- 3 - supplying the sensor electrically via a plurality of connecting lines
4 and/or at least detecting one electrical output signal of the sensor in which case
5 one of the connecting lines is routed via one actuatable switching element that is
6 suited to interrupt this line, and in which case the circuit arrangement is designed
7 to detect the potential on at least one of the connecting lines and, should an
8 abnormal potential be detected on this connecting line, actuating the switching
9 element for interrupting the connecting line,
- 10 - actuating the connection of a pair of connecting lines via an actuatable
11 further switching element should an abnormal potential of this further switching
12 element be detected to break down a potential difference between the
13 connections of the sensor.
- 1 9. The method according to Claim 8, wherein a number of the connecting lines are
2 routed via a switching element that can be actuated and that is suitable for
3 interrupting the relevant connecting line and, should an abnormal potential be
4 detected, these switching elements are at the same time actuated to interrupt the
5 relevant connecting lines.
- 1 10. The method according to Claim 8, further comprising the step of providing an
2 actuatable further switching element in each case between a number of pairs of
3 the connecting lines that is suitable for connecting the corresponding connecting
4 lines in pairs, and should an abnormal potential be detected, actuating these
5 further switching elements are at the same time to connect the relevant
6 connecting lines.
- 1 11. The method according to Claim 8, comprising the step of operating at least one
2 of the further switching elements wattless to connect the two connecting lines.

- 1 12. The method according to Claim 8, comprising the step of actuating at least one
2 of the further switching elements to connect the two connecting lines by means
3 of an actuating circuit which provides an actuating potential for actuating
4 purposes and is applied to a control input of the switching element, and in
5 which case connecting this actuating circuit to a number of connecting lines to
6 be supplied with the abnormal potential when an abnormal potential occurs on
7 one of these connecting lines.

- 1 13. A circuit arrangement for a linear exhaust gas sensor for an internal combustion
2 engine comprising:
- 3 - a control circuit for electrically supplying the sensor via a plurality of
4 connecting lines and/or at least for detecting one electrical output signal of the
5 sensor,
 - 6 - a first actuatable switching element controlled by the control circuit for
7 routing one of the connecting lines,
 - 8 - a detector for detecting the potential on at least one of the connecting
9 lines coupled with the first switching element for actuating the switching
10 element for interrupting the connecting line,
 - 11 - a second switching element for connecting a pair of the connecting
12 lines, wherein the circuit arrangement controls the connection of the connecting
13 lines in response to a detected abnormal potential of the second switching
14 element be detected to break down a potential difference between the
15 connections of the sensor.
- 1 14. The circuit arrangement according to Claim 13, wherein a number of the
2 connecting lines are routed via a switching element that can be actuated and that
3 is suitable for interrupting the relevant connecting line and, should an abnormal
4 potential be detected, these switching elements are at the same time actuated to
5 interrupt the relevant connecting lines.
- 1 15. The circuit arrangement according to Claim 13, wherein an actuatable further
2 switching element is provided in each case between a number of pairs of the
3 connecting lines that is suitable for connecting the corresponding connecting
4 lines in pairs, and should an abnormal potential be detected, these further
5 switching elements are at the same time actuated to connect the relevant
6 connecting lines.

- 1 16. The circuit arrangement according to Claim 13, wherein at least one of the
2 switching elements and/or further switching elements are designed as a channel
3 of a transistor.
- 1 17. The circuit arrangement according to Claim 13, wherein at least one of the
2 further switching elements can be operated wattless to connect the two
3 connecting lines.
- 1 18. The circuit arrangement according to Claim 13, wherein at least one of the
2 further switching elements is actuated to connect the two connecting lines by
3 means of an actuating circuit which provides an actuating potential for actuating
4 purposes and is applied to a control input of the switching element, and in
5 which case this actuating circuit is connected to a number of connecting lines to
6 be supplied with the abnormal potential when an abnormal potential occurs on
7 one of these connecting lines.
- 1 19. The circuit arrangement according to Claim 13, wherein the control circuit as
2 well as the switching elements and further switching elements are united in an
3 integrated circuit.